

REMARKS

Claims 1-16 are now pending in the application. Claims 1, 3, and 15 are amended. Claim 2 is cancelled. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-2, 6, 11, and 15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Jiang et al. (US Pat. No. 6,539,353). This rejection is respectfully traversed.

Jiang et al. is generally directed toward confidence measures using sub-word-dependent weighting of sub-word confidence scores for robust speech recognition. In particular, Jiang et al. is directed toward determining a word confidence measure based on weighted confidence measure scores for each sub-word unit in the word. In describing the prior art, Jiang et al. mentions that it is known to calculate the confidence score for a sub-word unit by taking the log ratio of an acoustic score over a filler model score or an anti model score for that sub-word (column 5, lines 21-24). Jiang et al. describes the filler model as a fully connected phone network, and the anti model as a model trained using data that includes every other sub-word except the sub-word being trained (column 5, lines 1-15). Thus, it might be said that Jiang et al. teaches estimating a background score by comparing input data to a filler model or anti model to obtain a filler model score or an anti model score. However, Jiang et al. does not teach estimating the background score based on a recognition score that tracks an absolute value of log likelihood that a word is in the speech signal. Moreover, Jiang et al. does

not teach estimating the background score by averaging such a recognition score over a predetermined period of time.

Applicant's claimed invention is generally directed toward robust word spotting. In particular, Applicant's claimed invention estimates background noise by averaging, over a predetermined period of time, a recognition score that tracks an absolute value of log likelihood that a word is in the speech signal. For example, independent claim 1 as amended recites "estimating a first background score based on the first recognition score by averaging the first recognition score over a predetermined period of time." Independent claim 15 has been amended to recite similar subject matter. Support for the amendments may be found in the specification as originally filed at claim 2, now cancelled. While claim 2 currently stands rejected based on equation 1 at column 5 of Jiang et al., equation 1 merely teaches weighted averaging of confidence scores for sub-word units to obtain an overall confidence score for a word. Thus, Jiang et al. does not teach estimating a background score by averaging a recognition score over a predetermined period of time. As a result, Jiang et al. does not teach, suggest, or motivate all of the elements of independent claims 1 and 15, especially as amended.

Applicant believes that claims 1 and 15 distinguish over the teachings of Laurila et al., especially as amended. Accordingly, Applicant respectfully requests the Examiner withdraw the rejections of independent claims 1 and 15 under 35 U.S.C. § 102(e) on these grounds, along with rejection on these grounds of all claims dependent therefrom.

REJECTION UNDER 35 U.S.C. § 103

Claims 7-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jiang et al. (US Pat. No. 6,539,353) in view of Laurila et al. (EP 1 020 847 A2). This rejection is respectfully traversed.

For discussion of Jiang et al. and the present invention, Applicant respectfully refers the Examiner to remarks detailed above with respect to rejection under 35 U.C.C. § 102(e).

Laurilla et al. is generally directed toward a method for multistage speech recognition using confidence measures. In particular, Laurilla et al. is directed toward a non-continuous command word recognition technique that begins by attempting to recognize a command word within a predetermined amount of time, and conditionally extends the amount of time to attempt to recognize a repetition of the command word based on plural confidence thresholds (Abstract). However, Laurilla et al. does not teach estimating the background score based on a recognition score that tracks an absolute value of log likelihood that a word is in the speech signal. Moreover, Laurilla et al. does not teach estimating the background score by averaging such a recognition score over a predetermined period of time. Accordingly, Laurilla et al. does not teach all of the limitation recited in independent claim 1, especially as amended.

The differences between Applicant's claimed invention and the teachings of the references relied upon by the Examiner are significant because Applicant's claimed invention can dynamically adjust for changes in background environment by forcing the matching of the word model with the background environment when the word is not spoken in temporal proximity to speaking of the word (i.e., just before and just after the

word is spoken). An essential component to this process is estimation of the background score with reference to which confidence in presence of a word is determined based on the recognition score for the word. Averaging the recognition score over a predetermined period of time is a component of the preferred technique for estimating the background score. None of the cited references, alone or combined, teach, suggest, or motivate this process or provide this capability.

Accordingly, Applicant respectfully requests the Examiner withdraw the rejections of claims 7-10 under 35 U.S.C. § 103(a) based on their dependence from an allowable base claim.

ALLOWABLE SUBJECT MATTER

The Examiner states that claims 3-5, 12-14, and 16 would be allowable if rewritten in independent form. Accordingly, Applicant has amended claims 3 and 16 to include the limitations of the base claim and any intervening claims. However, claims 4 and 5 have independent claim 3 as a base claim. Also, claim 12 is already in independent form as originally filed. Further, claims 13-14 have independent claim 12 as a base claim. Therefore, claims 3-5, 12-14, and 16 should now be in condition for allowance.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the

Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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By: Greg Stobbs
Gregory A. Stobbs
Reg. No. 28,764

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600

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